# Bringing CS to All Students through Equity, Agency, Opportunity, and Joy

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## "WHY TEACH COMPUTER SCIENCE?"

This was the pivotal question in an October teacher professional development event on the Tompkins-Seneca-Tioga Board of Cooperative Educational Services (**TST BOCES**) main campus in central New York. Through small group work and large team discussions, educators from across the district collectively identified their personal reasons for using computer science (CS) to engage students.

Their answers?
**Equity, Agency, Opportunity, and Joy.**

With support from the National Science Foundation, and in partnership with **CSforAll**, multi-state partners, NYU researchers, and private industry partners, TST BOCES has teamed up with the Ithaca City School District (ICSD) to create, implement, and maintain the highest quality learning opportunities for educators and students, with equity at the core.

*Teachers work collaboratively at the TST-BOCES workshop to deepen their understanding of the impact of CS education.*

Ithaca is rich in resources. Many students in ICSD increasingly take part in a variety of activities, both in and out of school, to build experiences and understanding of **computer science** (using computers to solve problems), **computational thinking** (strategies for problem solving that touches every single subject students encounter in school), **digital literacy** (finding, evaluating, creating, and communicating using digital tools), and **agency** (learning through activities that are meaningful and relevant to students, giving them choice and voice).

Despite this, many students in primary and secondary schools across central New York still do not experience these opportunities due to a variety of barriers. To address this, a team of ICSD teachers, instructional technology teachers on special assignment, and administrators are in the second year of a project to engage, educate, and empower every student through:

- Providing professional development for administrators and teachers, and supporting middle and high school course redesign
- Developing culturally responsive and inclusive curriculum to broaden the avenues for all students to participate
- Creating supports for weaving computational thinking, computing skills, and exemplary learning activities into the academic fabric of ICSD schools
- Establishing scope and sequence for a comprehensive and coherent series of CS knowledge, skills, and learning experiences

*TST BOCES educators prioritize the rationales behind their reasons for teaching CS in their schools.*

Further bolstering this network of support, is a menu of computer science resources created by a committee of TST BOCES representatives from a range of campus educational programs. These are designed to focus on the application of CS *concepts*, rather than memorizing content. In addition to a lending library of kits and materials, a vital component of this menu is teacher professional development for schools throughout the region.

Another key player in this collaboration is **Diane Levitt**, the Senior Director of K-12 Education at Cornell Tech. She works with New York City Schools to build an understanding of why, what, and how to inspire a passion for Computational Thinking through meaningful digital content creation. In this way, students develop agency in their studies and the joy of CS can truly be experienced by students and educators alike.

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Already, this has leveled the playing field for thousands of New York students.

At Boynton Middle school, every 6th grader will participate in a 10-week coding class this year, learning the skills to develop a program with social impact. Sixth Grade students in Family and Consumer Science at Dewitt Middle are using **Scratch** to teach someone how to use perseverance when solving a problem through creative coding.

Just recently, in the late fall of 2018, 4th Graders at Cayuga Heights dipped their toes into the Virtual Reality world to examine landforms, 3rd Graders at Belle Sherman used **BeeBots** to learn about sequencing, and Enfield Elementary kicked off STEM Fridays, where every grade level will have an opportunity to build skills with digital tools.

Ithaca is at the forefront of breaking down barriers to build a creative, relevant, and inclusive computing culture so that all students can be creators in this digital world. Through the pioneering work of TST-BOCES and ICSD, the opportunity, agency, and joy that equitable CS education affords will have lasting impact to be celebrated during CS Education Week, and beyond.



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